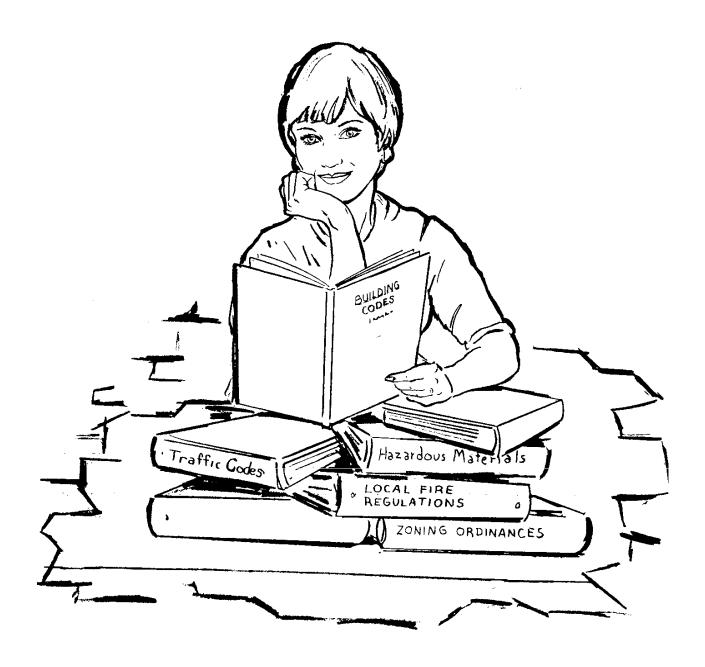# MITIGATION

UNIT 3

Introduction

As you learned in the first unit, the four phases of emergency management are mitigation, preparedness, response, and recovery. Conducting HAZARD IDENTIFICATION and VULNERABILITY ANALYSIS begins mitigation and is essential to the planning of all the other phases. This chapter details tools available to carry out mitigation in addition to focusing on continuity of government in a national security emergency as an important mitigation activity.

What is a HAZARD? A *HAZARD is a natural or technological force or event that could cause or create a disaster.* A hazard can cause the full range of natural disasters, major incidents, civil disorders, and resource crises that are the concern of the emergency program manager.

It would be ideal if your community were prepared for all types of hazards. However, in most cases it is not practical to be prepared for all types of hazards, as some may never occur in your community. For example, if you lived in the Midwest, it would be impractical to focus preparedness on hurricanes, as the probability of one occurring is near zero.

Thus, to begin planning a program to manage emergencies you must identify those hazards which, if they occur, could harm your community. This is the purpose of a hazard identification and vulnerability analysis. It is a two step process. First, you must decide which hazards have the potential of affecting your jurisdiction. That is the HAZARD IDENTIFICATION.

Second, you must identify how people, property, and structures will be damaged by the disastrous event. That is a VULNERABILITY ANALYSIS. If people or structures can be damaged by a hazard's impact, they are vulnerable. Not all hazards are applicable to all communities, but to find out which ones you need to prepare for, you must do a hazard identification and a vulnerability analysis.

Figure 3-1: Your community may face few or many different hazards.

Hazard Identification and Vulnerability Analysis

Just thinking about it, you can tell that some hazards are possible for your community while others would probably never occur. However, you should have more than just your own opinion. good way to judge what may happen in the future is to look at your community's history of disasters and major emergencies. Which of them were caused by hazards still present your community? A review of past disasters will give you a good idea of what to expect from these hazards in the future. Review your files to determine what types of emergencies your community has faced over the years. Also, talk to citizens who know local history, and to teachers in the local high school; community college or university. Find out if any major emergencies or disasters occurred prior to when the records of your department were initiated.

Federal agencies are important sources of information about current and future hazards. Through FEMA, you may be able to obtain maps and analyses designed to help you assess the relative level of risk to your community for the various natural hazards. Ask for this kind of help from the FEMA Regional Office, regional and national offices of the Environmental Protection Agency, Department of Agriculture, and U.S. Geological Survey, among others.

Figure 3-2: The first step in conducting a hazard analysis is to review your community's history of disasters and major emergencies.

Many of your colleagues in local Agencies will be able to help you with hazard information. Many communities with a flood hazard have a National Flood Insurance Program Coordinator, for example. Others in public works, fire, police departments and voluntary agencies may have good information.

As the emergency program manager you also must be knowledgeable about POTENTIAL FUTURE HAZARDS. Your review of disasters may not provide much insight into future hazards, so you need to take additional steps.

Potential hazards are of two types: those that may be brought into the community and those that now exist but have not been recognized as hazards. To identify the hazards which may be brought into your community, your task is to constantly observe the changes which take place. or example, have high rise apartments been built recently? Is there a possibility of a major high rise fire which did not exist a year or two ago? Is there a nuclear power plant which just went into operation near you? Has recent development increased stormwater runoff from roads and parking lots? In other words, are there now hazards which did not exist few years ago?

For the newly recognized hazards, you will have to look at the history of the community to see if these new discoveries suggest possible hazards in your area. Among the most dramatic new hazards are toxic wastes. Chemical wastes disposed of improperly are appearing to threaten people and communities -- their health, drinking water, and livelihood. Another example of new-appearing hazards is subsidence from abandoned mining. Mine shafts,

long ago forgotten, threaten communities with the sudden collapse of the earth's surface, other structures which were built over them. And, of course, there is always the threat of a newly-discovered earthquake fault. Finally, a new housing development may be built downstream from a dam or close to a river thus creating a hazardous situation for the new residents.

In looking to the future, talk about the earlier days of the community with some long-time residents. Do they recall a now-closed manufacturing plant of some sort that might have left behind its toxic wastes? Is the old town landfill now closed? In short, what remnants of the past life of the community can become tomorrow's hazards?

Four questions to ask about each hazard: (1) Could this hazard affect your jurisdiction? (2) Is this hazard a significant threat to your jurisdiction? (3) Approximately how often does this hazard occur in your jurisdiction? (4) What is your best estimate of the total population that could be seriously affected by this hazard?

Figure 3-3: Keep your eyes open for events which may be hazardous for your community.

Vulnerability Analysis

The second step in determining the hazards for which your community must prepare is the VULNERABILITY ANALYSIS. Simply put, if a disaster strikes, who or what will be affected and how badly? That is the vulnerability of your community.

To assess the vulnerability of your community, you need to review each hazard identified in the hazard analysis and what effect the emergency or disaster caused by the hazard will have on your community. For example, two rivers have flooded every 20 years according to an historical analysis. The potential vulnerability, therefore, is equal. One river, however, flows through the business center. The other through a farming region. Is the vulnerability of each community the same?

Probably not. While many factors need to be taken into account in a formal vulnerability analysis, it is likely that a flood in the business district would cause considerable economic loss any time it occurred. The flooded farm lands may or may not experience significant crop loss, depending on the season of the year. In the farming river flood, few lives are likely to be in jeopardy. The city flood might require evacuation and efficient search and rescue to protect lives.

As seen in this example, the vulnerability of the community is defined as the potential for death and injury to people and economic loss to individuals, organizations, or government caused by a disaster.

Your job in doing a vulnerability analysis is to take each hazard, starting with the highest likelihood ones, and assess the vulnerability of your jurisdiction. The purpose in doing a vulnerability analysis

is to identify what hazards are the "worst threats" and should have priority in your mitigation efforts and preparedness planning.

To do this, you should keep several things in mind. As stated in the definition of vulnerability, potential HUMAN LOSS and ECONOMIC LOSS are key considerations of vulnerability. As you examine potential economic loss, buildings and their contents are obviously primary concerns. Crop or range land damage in agricultural areas is another form of potential economic loss.

Looking at the vulnerability of people requires an assessment of where people live and work. Here you will want to concentrate on not only the general population, but also special populations. The special populations are the people who, in the event of an emergency, will require special provisions and attention.

Thus, you are going to want to arrange for their treatment in your emergency plans. Special populations include school children, the elderly, residents of nursing homes, disabled citizens in special care facilities, special language groups, etc., etc. Your vulnerability analysis should identify the locations of these people and the hazards to which they are vulnerable.

This will help you in detailing in the emergency plan what special tasks are necessary to provide for their safety.

Another consideration in estimating the vulnerability of your jurisdiction to hazards is existing mitigation or preparedness capabilities. For example, if there is a dam that was constructed as a flood control measure, then your vulnerability to flood damage is probably reduced. However, you now have some vulnerability to a new hazard, dam failure. Similarly, tornado shelters and drills will reduce the vulnerability of people to loss of life but not economic loss.

In addition to previously implemented mitigation capabilities, preparedness resources will reduce vulnerability. To complete the vulnerability analysis, you must understand and catalog the in-place hazard reduction efforts.

A final factor to remember in doing a vulnerability analysis is to get help! All the federal, state, county, and local agencies noted above as valuable in the hazard identification may be useful in estimating vulnerability. Also remember that the purpose of the vulnerability analysis is to help you know for what hazards to plan. Do your best to estimate the most vulnerable areas and people. Then set forth to make a plan. As you plan, you are likely to refine your hazard identification and vulnerability analyses as you discover more information on the hazards and the means for reducing their effects. That is the way it should be.

In summary, hazard identification deals with causes of potential emergencies or disasters. Vulnerability analysis deals with what is most likely to happen to people and property in those emergencies or disasters. Both these considerations are vital in helping you define the elements of the plans you must make to mitigate, prepare for, respond to, and recover from the emergencies or disasters which threaten your jurisdiction. Your Hazard Identification and Vulnerability. Analyses are the first steps in planning our emergency management program.

Keeping Your Hazard Identification Current

In keeping your hazard identification current you are primarily concerned with technological hazards. It is less likely that your community would suddenly become vulnerable to new natural disasters if it is not currently susceptible to them. There are exceptions, but the potential for natural hazards generally does not change from year to year.

Therefore, it is important that you monitor activities in your community, especially new high rise buildings, industrial plants, and other types of new construction which may possess a potential hazard for your community. New activities also can increase vulnerability to new hazards. For example, an industry in your community may begin to use certain types of hazardous chemicals or, worse yet, may begin to dispose of them in an improper manner. A new agricultural dam may pose a new threat to residences downstream. A new road may divert additional rain water runoff into a stream, exposing a business area to additional flood risk.

The list could go on, but it is important to remember that your job as an emergency program manager is not one in which you can just sit back and wait for an emergency or disaster to happen. One of your jobs is to keep your eyes open to all that is happening in the community that could become a hazard and result in an emergency situation.

THINGS TO DO

The following is a list of possible hazards for your community. First, add to the list any others that might occur in your community. Next, examine each hazard using the information obtained from the state geologist, state public health, nearest U.S. Geological Survey office, National Weather Service Office, or other appropriate source of information. Do the hazards have a high, medium, low or no likelihood of being a threat to your community? Put your answer in the column headed Likelihood. For example, if you live in Hawaii you would put "no" beside snow and ice storm. If you live near a river or on a flood plain, put high, medium, or low based on your conversation with the National Flood Insurance Program coordinator.

Look at the next column (Vulnerability). What is the vulnerability of your jurisdiction to this hazard? Given all you know about the vulnerability of your community, does the hazard present the threat of a disaster or just a routine emergency? Put an answer in the column.

In the final column provided, check those hazards that represent "Worst threats" to your community. The "worst threats" are those hazards with threats that have high or medium (a) likelihood of happening, or (b) disaster vulnerability. These are the hazards on which you will want to concentrate first.

Possible Hazard	Likelihood	Vulnerability	Worst Threats
Tornado			
Flood			
Hazardous Materials Dumps/ Storage			
Radiological Incident			
Urban Fire			
Power Shortage/Failure			
Winter Storm/Ice Storm			
Aircrash			
Water Supply Contamination			
Hurricane/Tropical Storm			
Earthquake			
Flash Flood			
Volcano			
Drought			
Chemical/Biological Warfare			
Highway/Transport Accidents			
Mudflow			
Dam Failures			
Wildfire			
Avalanche/Landslide			
Tsunami			
Civil Disorder			
Subsidence			

How Well Have You Learned?

SELF TEST REVIEW

Answer the following questions to test your knowledge of this part of Unit 3. Read each question carefully, then write in the answer that you think is correct. Answers can be found on page 3-11.

1.   What is a hazard?

_____

_____

_____

2.   What are two types of potential future hazards?

_____

_____

_____

3.   What is the first stage of mitigation?

_____

_____

_____

4.   What is the purpose of a hazard analysis?

_____

_____

_____

5.   What is the purpose of a vulnerability analysis?

_____

_____

_____

6.   What are the two major types of loss which occur in a disaster?

_____

7.   What are some sources of information you should use while preparing a hazard analysis?

_____

_____

_____

8.   Why should you identify special populations in the vulnerability analysis?

_____

_____

_____

CORRECT ANSWERS TO SELF TEST REVIEW ....Review Pages

1.   A hazard is a natural or technological force or event
       that could cause or create a disaster 3-2

2.   Potential hazards may be newly brought into the community
       or may already exist but not be recognized as hazards 3-4

3.   Hazard and vulnerability analyses...3-2

4.   To find out which hazards can strike 3-2

5.   To find out what damages would occur 3-6

6.   Human loss and economic loss...3-6

7.   Information sources include: reports on past disasters,
       local citizens, high school or college teachers,
       federal agencies, neighboring emergency
       program managers, officials in your own jurisdiction 3-4

8.   To detail in the emergency plan what special tasks are
       necessary to provide for the safety of
       these citizens...3-6

For every question that you answered incorrectly, review the pages listed above next to
the answer to find out why your answer was incorrect.

Emergency Mitigation

Mitigation efforts are those that *try to eliminate or reduce the impact of hazards which exist within a community and are a threat to life and property.* You will find that most mitigation efforts are the primary responsibility of other departments of local government. They are not often the direct responsibility of the emergency program manager.

That does not, however, mean that the emergency program manager lacks a role in mitigation. On the contrary, the emergency program manager has crucial roles in mitigation—that of motivator, coordinator, and monitor.

The role of the emergency program manager in mitigation is to be the conscience of emergencies. You must be alert of risks and monitor opportunities to avoid hazardous conditions. No other agency or organization in government or the private sector has he responsibility to look at all hazards and all risks. No other agency or organization has the mandate to protect the public against any emergency condition. The emergency program manager, under the ideas developed earlier in the unit on Comprehensive Emergency Management, can have a role in coordinating every kind of emergency.

Above all, the emergency program manager is the person with the broad scope of responsibility to assure that the community does not do anything to increase the chances of an emergency.

How do you do this? You monitor the possible hazards in the community, you motivate action on mitigation, and you coordinate available tools and techniques used by government agencies and private group to carry out mitigation. There are many tools that can be used to motivate efforts to reduce emergencies and be the conscience of the community when it comes to hazardous conditions.

Tools of Mitigation

As with all phases of emergency management, your principal tool is the authority vested in you by a local law or ordinance. The local law derives its authority from a state civil defense or emergency management law. The state law gives your local jurisdiction the right to enact whatever ordinances or laws it needs, so long as they stay within the limits of authority granted by the state.

Laws, then, are one tool of mitigation. All the power to mitigate is not going to reside in your local emergency management ordinance, but all the legal resources you need to avoid emergencies should be available in local ordinances.

Let's look at why this is true.

Typically, laws are among the most common ways communities attempt to mitigate emergencies, especially in the following areas:

- Zoning ordinances
- Building codes and enforcement
- Public health ordinances
- Fire regulations
- Hazardous materials ordinances
- Dam inspection ordinances
- Traffic codes
- And many others

Even with just these, few examples, you can readily see that many other people in the community have responsibility for mitigating hazardous conditions. Mitigation, although it is seldom called that, rests with the departments which deal with hazards on a day-to day basis. For example, the fire apartment is responsible for enforcing the fire regulations, and the building inspector is responsible for enforcing the local building codes. All these laws serve to mitigate hazards.

Thus, as the emergency program manager, it is your job to work with the various agencies or departments who have direct responsibility in these areas.

Your job with respect to mitigation is primarily to advise and initiate suggestions or ideas to department heads on hazard mitigation opportunities. As you learned earlier in this unit, you must be aware of developments in your community which could lead to an emergency. You should keep the departments informed of these potential hazards. In addition, you should work with the various departments to strengthen local laws or to pass new ones if they are needed to mitigate emergencies.
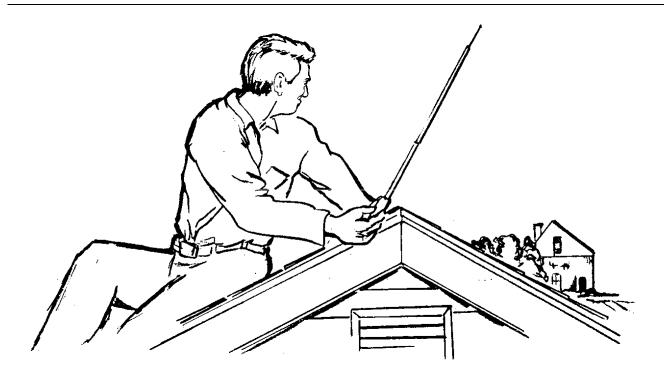

Figure 3-4: Mitigation efforts are those which try to eliminate or reduce the impact of a hazard, such as the traditional lightning rod.

THINGS TO DO

Look at the community's history of emergencies. What damages could have been reduced if certain mitigation measures were in place? Find out if they have been enacted since the emergency. Then meet with the heads of related government departments and agencies. Discuss with them the laws or regulations in the mitigation area for which they have responsibility. Determine which areas may need additional regulation and which ones are adequately covered. Finally, ask others what alternative tools are available, other than regulations, to mitigate a hazard.

Case studies and other information are available from state governments and from FEMA's Hazard Mitigation Staff on how communities have actually reduced their exposure to future losses.

Many tools other than ordinances are available to help mitigate emergencies. Some help you to directly reduce the effects of the hazard. For example, there are several direct ways at hazards are changed by STRUCTURAL MEASURES. Levees along the river keep flood waters within the banks. Dams upstream hold back storm water runoff. Stronger containers, built to withstand accidental punctures, help railroad cars more safely transport hazardous materials.

FINANCIAL INCENTIVES AND DISINCENTIVES also can work to keep the community safe from improper treatment of hazards. They generally take a form of tax levies or abatements. Levies are used to discourage production of hazardous conditions (like hazardous wastes) and the latter are used to encourage mitigation treatment of hazards (like safe waste disposal). A chemical manufacturing plant, for example, can create a hazard that would have to be handled by the local emergency services. Some jurisdictions have placed an additional tax levy on the company to offset the increased cost of preparedness. Other locales required the company to have its own emergency equipment, and demonstrate through exercises that it will work in cooperation with the city's emergency service organizations.

Information is also a key tool of mitigation. In some areas HAZARD DISCLOSURE REPORTS are required of any real estate transaction occurring in the vicinity of a hazard. If a house is in the floodplain, the potential buyer needs to know the risk. LABELING of hazard materials, similarly, can go a long way toward improving their handling.

PUBLIC INFORMATION and community relations are vital parts of any overall mitigation strategy. People need to be informed about the possible alternatives available when dealing with hazards. Your role as a teacher and trainer, which you will learn about later, includes not only what to do after a disaster strikes, but also the duty to teach the community about how to avoid an emergency. One way to do this is to play the role of mitigation advocate before the city council or other policy-making boards. Presentations to civic groups and professional societies is another way to get the mitigation message out.

LAND USE PLANNING is, perhaps, the most frequently found tool of mitigation.

In the NATIONAL FLOOD INSURANCE PROGRAM (NFIP), the safe use of floodplains is a long-term goal, and land use planning is the path to securing the most harmonious treatment of land for commerce, residences, and recreation.

Among the mitigation components of a NFIP is RISK MAPPING in which communities have their floodplains assessed to determine possible flood levels. In some circumstances, houses and businesses that meet certain criteria are completely RELOCATED out of the floodplain. Land in he floodplain is then used for less vulnerable purposes, for example, recreation. Where possible to protect an existing structure that cannot be moved, FLOOD PROOFING is undertaken.

A key part of land use planning is the local planning commission and its requirement for site plan reviews. This is an important point of possible intervention in unsafe development of the community. Your role as a mitigation motivator could lead you to stay in contact with the planning commission in order to be alert to development plans that will, some time in the future, put a strain on your emergency response capabilities. New types of housing, businesses, manufacturing plants, roads, etc., can place a burden on emergency services. Your role is to ask the question: "How will the decision to develop in such a way affect the Safety of the community in the next decade?"

Many laws and ordinances can be on the books without any effective way of MONITORING or INSPECTING potential violators. These are two important tools

Figure 3-5: Using mitigation tools will build a strong foundation for your emergency program.

of hazard mitigation. A good example of the use of these tools is the federal DAM SAFETY PROGRAM. For years, dams were constructed and certain safety requirements existed. But no agency was responsible for inspecting the thousands of large and small dams across the country. In recent years, a federal inspection program has found many dangerous and unsafe dams. Because of the use of the inspection tool, the program is certain to mitigate future flood and dam-break emergencies.

PROFESSIONAL TRAINING is another tool of mitigation. Drivers of hazardous materials trucks, for example, can be taught special response techniques that will make them better able cope with an emergency.

These mitigation tools illustrate ways you, the emergency program manager, can influence mitigation actions in your community. Your role is to inform, to question, to negotiate, and to motivate. You need to know where technical expertise exists in our community, in state government and in federal agencies and how to use it. You need to bring together the agencies and organizations necessary for carrying out day-to-day emergency mitigation in order to get them to work cooperatively in pursuit of public safety.

Above all, your role in mitigation is part of, and equal to, your roles in preparedness and response. You build bridges. You join together groups for a goal that few can argue with: improved health and safety.

Mitigation partnerships, however, are perhaps the most difficult to create and sustain. Creation is often difficult because those who may be a target of new regulations look upon a partnership as

joining forces with the enemy. Continuation of mitigation partnerships is difficult because the participants often lose interest if there is a sense of immediate danger.

POST DISASTER RECOVERY is an important time for mitigation because the sense of danger for the jurisdiction is very real. A disaster often makes clear the opportunities available for hazard mitigation. The recent losses in a disaster can serve as a guide for future action.

Major disasters with Federal Government relief may enable the emergency program manager to participate in or support the Interagency Hazard Mitigation Team efforts to identify ways of minimizing future losses. The Interagency Hazard Mitigation Team contributes significantly to state hazard mitigation planning, efforts which are required as a condition for future assistance under a Presidentially declared major disaster.

The Interagency reports provide crucial technical assistance as well as an important advocacy position in support of mitigation efforts. As a result, the Interagency Hazard Mitigation Team is a valuable tool of mitigation following a major disaster.

THINGS TO DO

Mitigation actions must be cooperative efforts of many local and state government agencies. Many of these agencies are not the people with whom the emergency program manager has traditionally worked. New relationships will have to be created. This exercise is designed to alert you to new partners in the mitigation phase of emergency management.

Go back to your hazard identification and focus on all the hazards you identified as present (any level of likelihood) in your community. Next, list the local, state or federal agency you think might have responsibility for the hazard. If you do not know now, make a note to find out. These are your partners in mitigation.

Mitigation Strategies

One of the principal problems with the mitigation phase of emergency management is its priority with respect to the other phases—preparedness, response, and recovery. It is usually easy to see the need for a preparedness plan, the need for the ability to respond to an emergency, and the need for a community to be able to recover from a disaster. As a result, mitigation frequently gets less attention than other phases of emergency management.

With the local amount of money available for emergency management usually being tight, how much should be spent on mitigation? Usually, money spent on mitigation comes from a fixed budget. Therefore, focusing on mitigation means less money available for preparedness, response, and recovery. For this reason, mitigation is often the phase of emergency management for which most communities do not have adequate programs.

Mitigation, however, is the one phase of emergency management where creative planning can substitute for money or help you obtain special funding. This approach can permit a jurisdiction to finance certain emergency management programs themselves with only a small additional burden on the citizens. A good example of this type of funding is the "Emergency 911 " bill enacted by many state legislatures. Under such a bill, each county in a state must establish the emergency 911 phone number for all telephones. The typical bill establishes a 911 "fee" of $.10/month to be paid by all telephone customers to finance the 911 program.

Money should not be at the heart of your mitigation efforts. There are a wealth of alternatives to expensive programs. Remember, the goal of mitigation is to avoid hazardous circumstances. If you can avoid them in the first place, you will need far less money for remedial efforts later on.

Mitigation Alternatives

There are several different mitigation strategies, some of which require money, but most of which substitute awareness, foresight, and creative efforts for money. Several of these mitigation strategies are explained below. Read them carefully. Some may give you ideas on how to apply mitigation to your community.

1.   **To prevent the creation of the hazard in the first place:** This is the most basic mitigation strategy, and is carried out through a community's fire regulations, building codes, and other ordinances. For example, the requirement that all public buildings have sprinkler systems is a mitigation technique against major fires. The inspection of new buildings to make sure the construction conforms to the local building codes is a way of mitigating against improper construction which could result in a major emergency such as a fire or building collapse.

2.   **To reduce or limit the amount or size of the hazard manufactured or brought into being:** For example, a 5 mph speed limit in a school zone reduces

 the possibility of a child being struck by a car. If hazardous chemicals are used by a manufacturing plant, there may be a limit as to the amount which may be on hand at any one time. Improved building codes offer similar long-term benefits.

3.   To separate the hazard from that which is to be protected: There are several ways in which this can be one. One is to restrict such things as the hazardous use of chemicals to only specific areas within a community. For example, only areas which are zones for particular industrial use are permitted to use hazardous chemicals. Another way is to surround the hazard by some type of containment structure. The banning of vehicles carrying explosives from densely populated areas is still another method of separating the hazard from the community. Finally, efforts to restrict or modify building in floodplains are documented ways of reducing losses.

4.   To prevent the release of the hazard that already exists: Impounding nuclear wastes is a good example of preventing the release of a hazard which already exists.

5.   To modify the basic qualities of a hazard: For example, suppose that dangerous chemicals were packaged with a neutralizing agent right next to the chemicals. If the chemical container were damaged, the neutralizing agency would automatically release, thus minimizing the toxic effects of the spilled chemical. In another case, a distinctive smell is added to odorless liquid propane gas so that people can tell if it is present and thus avoid anger.

6.   To modify the rate or spatial distribution of release of the hazard: Suppose that the federal dam safety inspection program detected a crack in a dam, or some other sign of instability. The water behind the dam could be lowered gradually so as not to endanger the environment downriver and relieve the pressure on the dam until repairs are made. Stabilizing a potential landslide is another example. Finally, the use of levees reduces damages in some areas and increases them in others.

7.   To engage in research to attack a particular hazard: Industry and the federal government put money into research to develop ways of making materials (like building materials) and products (like autos) safer.

8.   Information dissemination: Public information is key to preventing a wide range of emergencies. The disclosure of potential hazards through reports to potential buyers of land and structures or users of chemicals is one form of public information that can be required.

Summary of Your Role in Mitigation

The role of the emergency program manager in community mitigation varies, depending upon the hazards, the skills of the emergency program manager, and the specific responsibilities of other government departments and agencies. Regardless of how active you are in the actual mitigation efforts of your community, it is your responsibility as the emergency program manager to monitor how other governmental departments are carrying out their jobs as they affect the safety of the community. Your role also is

to motivate mitigation through hazard awareness, coordinate agencies that have the formal responsibility for mitigation, and ensure continuing enforcement of hazard reduction measures.

How Well Have You Learned?

SELF TEST REVIEW

Answer the following questions to test your knowledge of this part of Unit 3. Read each question carefully, then write in the answer that you think is correct. Answers be found on page 3-22.

1.   What is mitigation?

_____

_____

_____

2.   What are the tasks of the emergency program manager in mitigation?

_____

_____

_____

3.   How does the emergency program manager perform his or her role in mitigation?

_____

_____

_____

4.   List three forms of mitigation that can be accomplished by local laws or ordinances.

_____

_____

_____

5.   List four tools other than laws that can be used for mitigation.

_____

_____

_____

6.   Which of the following is a structural measure for mitigation?
    _____   A.   Flood insurance
    _____   B.   Storm shelters
    _____   C.   Preparedness plans
    _____   D-. Levees

7. Describe the purpose of financial disincentives in emergency mitigation.

    _____

    _____

    _____

8. What is the role of public information as a tool for mitigation?

    _____

    _____

    _____

CORRECT ANSWERS TO SELF TEST REVIEW .... **Review Pages**

1. Efforts to eliminate or reduce the damaging impact of hazards...........................3-12

2. To advise and initiate suggestions or ideas to department
    heads on hazard mitigation opportunities; to monitor
    mitigation efforts of agencies and to motivate mitigation
    through hazard awareness ....3-12 and 3-19

3. By coordinating the available tools and techniques used by
    government agencies and private groups; by alerting
    agencies to opportunities, monitoring their performance,
    coordinating agency responsibilities, and ensuring
    continuing enforcement of hazard reduction measures......................................3-12

4. Common legal efforts to mitigate include: zoning ordinances,
    building codes, public health, fire regulations, hazardous materials,
    dam safety inspection, traffic codes ....3-12 and 3-13

5. Financial incentives and disincentives, hazard disclosure
    reports, public information, land use planning, risk mapping,
    monitoring and inspecting, professional training, and
    structural measures ....3-14 and 3-15

6. D. Levees 3-14

7. To discourage the development or production of hazardous
    conditions. For example, a high tax on a chemical
    manufacturer for storing hazardous materials might convince
    the manufacturer to store them elsewhere. If the materials
    remained, then the high tax can be applied to increased emergency
    preparedness to cope with the risk of stored hazardous materials 3-14

8. Public information for mitigation is useful for sharing with
    citizens the possible alternatives for dealing with hazardous
    conditions and then applying pressure for implementing mitigation....................3-14

For every question that you answered incorrectly, review the pages listed above next to the answer to find out why your answer was incorrect.